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| Minnesota Pollution Control Agency (MPCA), 520 Lafayette Road North, St. Paul, MN 55155-4194 | Grit Removal Facilities Review Checklist  NPDES/SDS Permit Program  National Pollutant Discharge Elimination System (NPDES)/ State Disposal System (SDS)  Doc Type: Plan/Specification Review Summary |

**Purpose:** This checklist is intended for use by design engineers, to assist Minnesota Pollution Control Agency (MPCA) review engineers in the efficient review of planning and design documents. The information requested is the minimum technical data necessary for MPCA staff to review proposed designs and to determine whether there is reasonable assurance that the treatment system, when constructed, will comply with permit conditions, regulations, and criteria of the MPCA.

**Instructions:** The information in this checklist is based on the ***Recommended Standards for Wastewater Facilities published by the Great Lakes Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers (Ten State Standards) 2014 Edition,*** other accepted engineering references, and MPCA recommendations. Specific references, other than Ten State Standards, are listed where appropriate. The checklist is organized according to the numbering sequence found in Ten State Standards to allow for ease in locating the entire content and text of the recommendations.

The checklist is designed so that a “**yes**” answer indicates compliance with Ten State Standards et al.

A “**no**” answer indicates a deviation from Ten State Standards et al. Answering “no” to any question will require justification and possibly supporting information, from wastewater treatment plant operational data, to demonstrate how the intent of the recommendation will be met. Additional information may be requested based on site specific conditions.

A “**N/A**” answer means not applicable because the equipment associated with the question is not included in the design.

Wastewater Treatment Facility information

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date (mm/dd/yyyy):** | |  | **MPCA Project No:** |  |
| **Title of project:** |  | | | |

Permittee information

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Facility name: | |  | | |
| Contact name: | |  | NPDES/SDS Permit No: | MN |
| Email: |  | | Phone number: |  |

Design Engineer information

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Contact name: | |  | Contact phone number: |  |
| Email: |  | |  |  |

**Phase:**  Planning Phase  Design Phase

**Type of grit removal:**  Horizontal flow grit chamber  Aerated grit chamber  Vortex grit chamber

Influent Characteristics

|  |  |  |
| --- | --- | --- |
|  | **gallons per minute, gpm** | **million gallons per day, mgd** |
| **Average Wet Weather (AWW) flow** |  |  |
| **Peak Hourly (PH) flow** |  |  |

63. Grit Removal Facilities

*(Only use a “N/A” answer if the equipment associated with the question is not included in the design)*

*63.2 Location*

|  |  |  |
| --- | --- | --- |
| **63.21 General** | **Yes** | **No** |
| Are the grit removal facilities located ahead of pumps and comminuting devices? |  |  |
| Are coarse bar racks located ahead of the grit removal facilities? |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **63.22 Housed Facilities** | | | | | | | | | |
| **63.221 Ventilation** | | | | | | | **Yes** | **No** | **N/A** |
| Is fresh air introduced continuously at a rate of at least 12 air changes per hour, or intermittently at a rate of at least 30 air changes per hour? | | | | | | |  |  |  |
| Are odor control facilities warranted? | | | | | | |  |  |  |
| **63.222 Access** | | | | | | | | | |
| Is an adequate stairway access to above or below grade facilities provided? | | | | | | |  |  |  |
| **63.223 Electrical** | | | | | | | | | |
| Does the electrical equipment in comminutor chambers, where hazardous gas may accumulate, meet the requirements of the National Electrical Code for Class I, Division I, Group D locations? | | | | | | |  |  |  |
| Are explosion proof gas detectors provided in accordance with Section 57 of Ten State Standards? | | | | | | |  |  |  |
| **63.23 Outside facilities** | | | | | | | | | |
| Are grit removal facilities located outside protected from freezing? | | | | | | |  |  |  |
| ***63.3 Type and number of units*** | | | | | | | | | |
| For a small wastewater treatment plant serving separate sanitary sewer systems, is a single manually cleaned or mechanically cleaned grit chamber with bypass provided? | | | | | | |  |  |  |
| For a larger wastewater treatment plant serving separate sanitary sewer systems, is at least one mechanically cleaned unit with a bypass provided? | | | | | | |  |  |  |
| Are facilities other than channel-type provided with adequate and flexible controls for velocity and/or air supply devices and with grit collection and removal equipment? | | | | | | |  |  |  |
| Type of units: |  | | | | | |  |  |  |
| Volume of units: |  | | | | gallons | |  |  |  |
| Do aerated grit chambers have air rates adjustable in the range of 3 to 8 cubic feet per minute per foot of tank length? | | | | | | |  |  |  |
| Air requirements: | |  | | | cubic feet per minute per foot of tank | |  |  |  |
| Is detention time in the aerated tank in the range of 3 to 5 minutes at peak hourly flowrate? | | | | | | |  |  |  |
| ***63.4 Design Factors*** | | | | | | | | | |
| **63.41 General** | | | | | | | | | |
| Is the design effectiveness of the grit removal system commensurate with the requirements of the subsequent process units? | | | | | | |  |  |  |
| **63.42 Inlet** | | | | | | | | | |
| Is the inlet turbulence minimized in a channel-type unit? | | | | | | |  |  |  |
| **63.43 Velocity and detention** | | | | | | | | | |
| Is the channel-type chamber designed to control velocities during normal variations in flow as close as possible to 1 foot per second? | | | | | | |  |  |  |
| Flow through velocity: | | |  | | | feet per second at PH flow |  |  |  |
| Is the detention period based on the size of particle to be removed? | | | | | | |  |  |  |
| Are aerated grit removal facilities provided with adequate control devices to regulate air supply and agitation? | | | | | | |  |  |  |
| **63.44 Grit Washing** | | | | | | | | | |
| Was the need for grit washing determined by the method of grit handling and final disposal? | | | | | | |  |  |  |
| **63.45 Dewatering** | | | | | | | | | |
| Are provisions made for isolating and dewatering each unit? | | | | | | |  |  |  |
| Does the design provide for complete draining and cleaning by means of a sloped bottom equipped with a drain sump? | | | | | | |  |  |  |
| **63.46 Water** | | | | | | | **Yes** | **No** | **N/A** |
| Is there an adequate supply of water under pressure for cleanup? | | | | | | |  |  |  |
| **63.47 Grit Handling** | | | | | | | | | |
| Is a convenient and adequate means for removing grit provided? | | | | | | |  |  |  |
| If the grit removal facilities are located in deep pits, is mechanical equipment provided for hoisting or transporting grit to ground level? | | | | | | |  |  |  |
| Are impervious, non-slip, working surfaces with adequate drainage provided for grit handling areas? | | | | | | |  |  |  |
| Are grit transporting facilities provided with protection against freezing and loss of material? | | | | | | |  |  |  |
| Are facilities provided for handling, storage, and disposal of grit in a manner acceptable to the regulatory agency? | | | | | | |  |  |  |
| Final disposal location for grit: | | | |  | | | | | |

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| --- |
| Justification for all questions answered with a “no”: |
|  |

**References**

GLUMRB (2014 Edition) *Recommended Standards for Wastewater Facilities* (Ten State Standards), Health Research, Inc., Health Education Services Division, Albany NY.